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Jullien-Davin

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[54] **VARIABLE SPEED STEPWISE POWER FEED DEVICE**

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[30] **Foreign Application Priority Data**

Jan. 19, 1971 France 7101879

[52] **U.S. Cl.** **74/112,** 74/436

[51] **Int. Cl.** **F16h 27/00**

[58] **Field of Search** 74/112, 436

[56] **References Cited**

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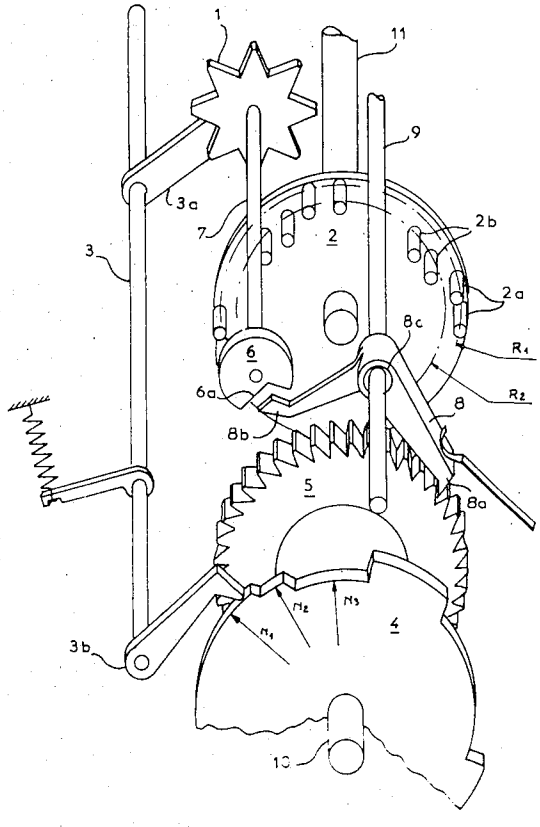
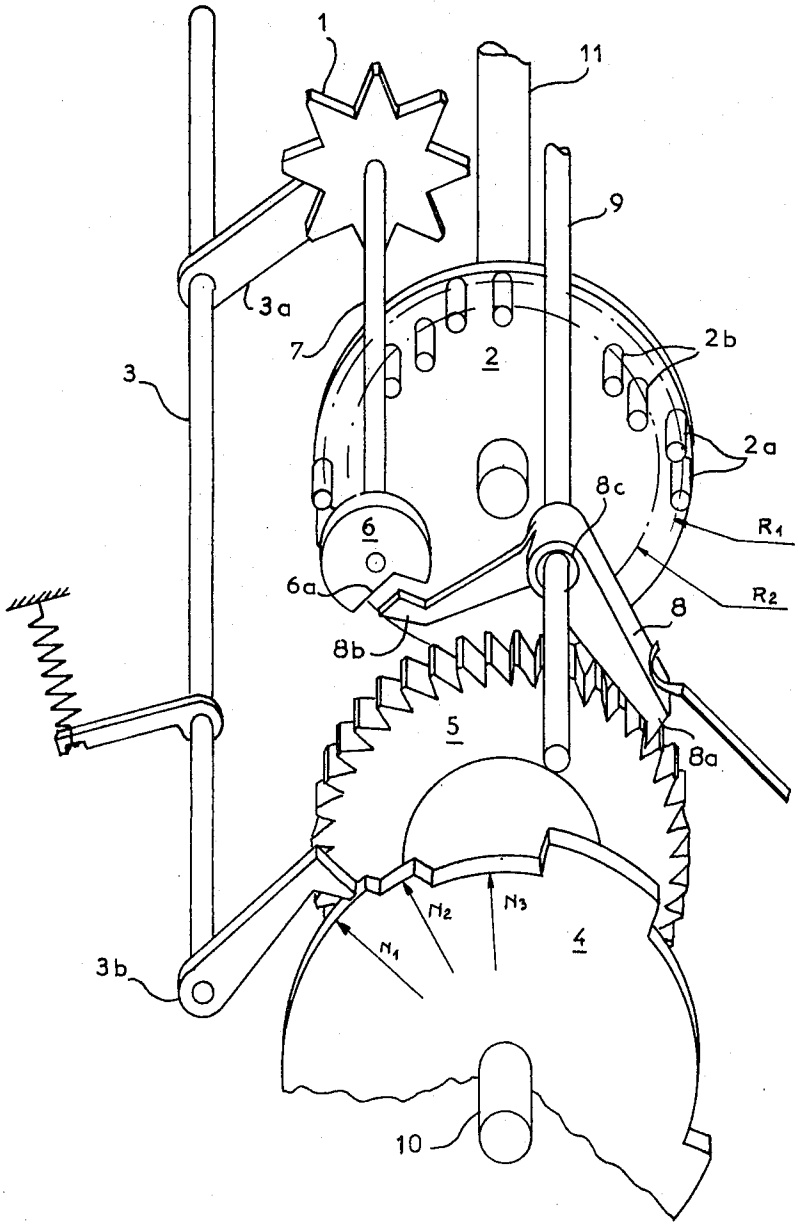
[57] **ABSTRACT**

Variable speed stepwise power feed device for a programmer of the class comprising motor means, a cam unit integral with a ratchet iron wheel on which a feed pawl can act which is actuated by an eccentric from said motor means, the engagement of said pawl with said ratchet iron wheel being controlled by a disengaging cam, the improvement which consists in that said disengaging cam is integral in rotation with a star wheel wedged on an axis turning freely in a bearing, said axis being free to move, from a non-meshing position, so as to bring the star wheel more or less near a plate driven into continuous rotation from said motor means and comprising two sets of wedges arranged concentrically on said plate so that the star wheel depending on the degree of approach with respect to said plate, meshes with the nearest set of wedges or simultaneously with the two nearest sets of wedges and is driven at different speeds.

2 Claims, 1 Drawing Figure




1
11
9
3a
7
2
2b
3
2a
8c
6
R1
6a
R2
8
8b
5
8a
N1
N2
N3
4
3b
10

VARIABLE SPEED STEPWISE POWER FEED DEVICE

BACKGROUND OF THE INVENTION

This invention relates to a stepwise power feed device which makes it possible to vary within certain limits, the time base, i.e., the frequency, of pitch passage.

This device is applicable, in particular, to the control of the cam unit of programmers designed for automatic washing machines.

PRIOR ART

Means are known for stopping the stepwise feed, which involve disengaging the motor catch, for a period of time which may be longer or shorter, determined by a device acting as an auxiliary timer. This method, which makes it possible to obtain adjustable times manually can be simplified in cases in which manual adjustment is not necessary and, as a result, can be cheaper.

SUMMARY OF THE INVENTION

The device according to the invention makes it possible, using simple means, to select several fixed pitch passage frequencies during the completion of the cycle of an automatic washing machine programmer.

To this effect, the invention relates to a variable speed stepwise power feed device for a programmer comprising motor means, a cam unit integral with a ratchet iron wheel on which an advance pawl can act which is actuated through an eccentric from said motor means, the engagement of said pawl with said ratchet wheel being controlled by a disengaging cam, which device is characterized by the fact that said disengaging cam is integral in rotation with a star wheel wedged on an axis turning freely in a bearing, said axis being free to be moved, from a non-meshing position, in order to bring said star wheel more or less near a plate driven into continuous rotation from said motor means and presenting at least two sets of wedges arranged concentrically on said plate so that the star wheel, depending on the degree of approach with respect to said plate, meshes with the nearest set of wedges or simultaneously with the two nearest sets of wedges and is driven at different speeds.

DESCRIPTION BRIEF OF THE DRAWING

In the appended drawing the sole FIGURE illustrates, by way of example, an embodiment of the device according to the invention which makes it possible to obtain various stepwise feed frequencies in ratios of 1/1, 1/2 and 1/4.

DETAILED DESCRIPTION OF THE INVENTION

At the outlet of a gear motor unit, known per se, two axes **11** and **9** are in continuous rotation in a ratio of **1** turn of axis **11** to four turns of axis **9.** A plate **2** integral with axis **11** comprises two sets of four pairs of wedges **2***a* and **2***b*, with each set being arranged respectively on two radii R_1 and R_2 of plate **2.** The wedge pairs **2***a* on radius R_1 are arranged at 90° from one another as well as the wedge pairs **2***b* on radius R_2. Furthermore, wedge pairs **2***a* and wedge pairs **2***b* are staggered angularly with respect to one another, for example, by 45°.

On axis **9,** an eccentric (not shown) acts on a pawl **8,** which, through its nose **8***a*, in a manner known per se, provides for the stepwise feed of a ratchet iron wheel **5** integral with the cam unit, on an axis **10,** a first cam **4** of which (the only one shown in the FIGURE) acts as a selection cam.

The cam **4** indeed, has a three level profile N_1, N_2 and N_3 which is followed by a lever **3***b*. The angular position of this lever around an axis **3** acts on arm **3***a*, which is integral as well with axis **3,** supporting an eight toothed star wheel **1** which is integral, through a rod **7,** with a cam **6.** Cam **6,** which rotates concentrically with respect to wheel **1** has a cut-out **6***a* over a quarter of its periphery. The pawl **8** has an arm **8***b* which, cooperating with cam **6,** induces the clearance of nose **8***a* from wheel **5** throughout three quarters of the rotation of said cam **6.**

Three stepwise feed rates correlate with the three positions which may be taken by sensing lever **3***b* on selection cam **4.**

Indeed, when the sensing lever **3***b* is on the largest radius N_1 (position shown), the wheel **1** is outside the influence of the wedges of plate **2,** and cam **6** does not act on the pawl **8,** which therefore actuates the ratchet iron wheel **5** four times by one step for each turn of axis **11** since axis **9** rotates four times faster than axis **11.**

The position of wheel **1** correlates with the average radius N_2 of the selection cam such that said position meshes only with wedges *a* located on the largest radius R_1 of plate **2.** For one turn of this plate, wheel **1,** and therefore cam **6,** also performs a rotation, the ratio of the radii of wheel **1** and of plate **2** being chosen to this effect, but pawl **8** will only act once on wheel **5** upon passage of notch **6***a* in front of arm **8***b*. On the other hand, when wheel **1** is in its lowest postion (correlating with the minimal level N_3 of **3***b* on selection cam **4**), it performs two rotations for each rotation of plate **2,** for it is in meshing engagement with all wedges **2***a* and **2***b* of said plate. Under these conditions, since cam **6** performs two rotations as well, the pawl will act twice on wheel **5** for one rotation of axis **11,** driving the plate.

Three possible stepwise power feed frequencies are thus obtained for each rotation of axis **11,** in the ratios of **4, 1** and **2.**

The device according to the invention is particularly well suited to the stepwise power feed control of cam units of automatic washing machine programmers for the purpose of obtaining various feed rates as a function of a predetermined diagram, which feed rates are controlled by a selection cam integral with the cam units.

What I claim is:

1. In a variable speed stepwise power feed device for a programmer, a ratchet iron wheel, a pawl cooperable with the teeth of the ratchet wheel to turn the wheel, a cam unit serving as a selecting cam integral with the ratchet wheel, a disengaging cam for controlling engagement of the pawl with the ratchet wheel, the improvement including a star wheel, said star wheel being mounted on a freely rotating axis, a plate integral with a second axis parallel to the first axis, two sets of wedges arranged concentrically on the plate, and said axis being movable from a position in which the star wheel is out of operative engagement with the plate to a position, dependent upon the degree of approach of the star wheel, in which the star wheel meshes with the nearest set of wedges or simultaneously with the two nearest sets of wedges and is driven at different speeds, and means moving the freely rotating axis relative to the second axis.

2. The device as claimed in claim **1** in which the means for moving the freely rotating axis relative to the second axis includes a sensing lever urged into engagement with the profile of the selection cam, a third axis on which said sensing lever is secured.

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